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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/712,818	11/12/2003	Mark R. Fernald	CC-0675	8840

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EXAMINER	
WASHBURN, DOUGLAS N	
ART UNIT	**PAPER NUMBER**
2863	
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09/19/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/712,818	FERNALD ET AL.	
	Examiner	Art Unit	
	Douglas N. Washburn	2863	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *13 August 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-8 and 10-39* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6,8,11,14-16,18,19,21-23,25-30,32,34 and 37-39* is/are rejected.

7)☒ Claim(s) *7,10,12,13,17,20,24,31,33,35 and 36* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *12 September 2005* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1 Applicant amendment fails to overcome §102(b) rejection of claims 26, 29, 30, 32, 34 and 37 and the rejection is maintained.

Applicant amendment fails to overcome §103(a) rejection of claims 1-6, 8, 11, 14-16, 18, 19, 21-23, 25, 27, 28, 38 and 39 and the rejection is maintained.

Applicant amendment fails to overcome objection to claims 7, 10, 12, 13, 17, 20, 24, 31, 33, 35 and 36 and the objection is maintained.

Claim Rejections - 35 USC § 102

2 The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 26, 29, 30, 32, 34 and 37 are rejected under 35 U.S.C. 102(b) as being anticipated by Krempl et al. (US 4,216,403) (Hereafter referred to as Krempl).

Krempl teaches:

Regarding claim 26, a strain sensor for clamping onto the outer surface of a pipe to provide a respective strain signal indicative of a pressure disturbance within the pipe (known to attach strain gauges on pipes to measure stretch of the pipe or pressure within the pipe; column 1, lines 58 and 59).

Regarding claim 26, a strap (piezoelectric sensor element 21 again is embedded between two insulating tapes 19, 20 forming a flexible measuring strip, the ends of which are clamped by means of strainer parts 22, 23 and leader ends 24, 25; column 7, lines 40-44; figure 5).

Regarding claim 26, piezoelectric film material having a pair of conductors disposed on opposing surfaces (the piezoelectric measuring sensor element is a flexible piezoelectric film, the opposite surfaces of the film being in connection with electrically leading contact surfaces; column 2, lines 39-42) thereof wherein the piezoelectric film material is attached to the strap (piezoelectric sensor element 21 again is embedded between two insulating tapes 19, 20 forming a flexible measuring strip, the ends of which are clamped by means of strainer parts 22, 23 and leader ends 24, 25; column 7, lines 40-44; figure 5).

Regarding claim 29, the strain sensor includes an attachment device for securing the ends of the strap of the strain sensor to clamp the strain sensor onto a pipe (piezoelectric sensor element 21 again is embedded between two insulating tapes 19, 20 forming a flexible measuring strip, the ends of which are clamped by means of strainer parts 22, 23 and leader ends 24, 25; column 7, lines 40-44; figure 5).

Regarding claim 30, the ends of the strain sensor are removably attached together to enable the removable and reattachment to a pipe (In another embodiment the tension binder is provided with an easily releasable fastener, for instance a strainer; column 5, lines 12 and 13).

Regarding claim 32, the piezoelectric film material includes at least one of polyvinylchlorine fluoride (PDVF), polymer film and flexible PZT (known piezoelectrics are for instance Polyvinylidene-Fluoride (PVDF), Polyvinyl-Fluoride (PVF), Polyvinyl-Chloride (PVC), Polyacrylo-nitrile (PAN), Polymethyl-Methacylate (PMMA), fluorinated Ethylene-Propylene (FEP), Polystrene, Polyethylene (PE) and its Terepthalate, Polycorbonate, Polysulfone, and Nylon; column 3, lines 20-27).

Regarding claim 34, the piezoelectric film material extends around a substantial portion of the circumference of a pipe (figure 5).

Regarding claim 37, an electrical insulator between the piezoelectric film material and the strap (it may be advantageous to provide flexible interposition layers between the piezoelectric film and the surface of the body to be measured. These layers may serve as an electrical insulation, as protection against mechanical damage of the film, or for taking charge off the piezoelectric film; column 3, lines 42-48).

Claim Rejections - 35 USC § 103

3 The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 27, 28 and 38 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kempl in view of Yelke (US 4,304,126) (Hereafter referred to as Yelke).

Kempl teaches:

Regarding claim 26, a strain sensor for clamping onto the outer surface of a pipe to provide a respective strain signal indicative of a pressure disturbance within the pipe (known to attach strain gauges on pipes to measure stretch of the pipe or pressure within the pipe; column 1, lines 58 and 59).

Regarding claim 26, a strap (piezoelectric sensor element 21 again is embedded between two insulating tapes 19, 20 forming a flexible measuring strip, the ends of which are clamped by means of strainer parts 22, 23 and leader ends 24, 25; column 7, lines 40-44; figure 5).

Regarding claim 26, piezoelectric film material having a pair of conductors disposed on opposing surfaces (the piezoelectric measuring sensor element is a flexible piezoelectric film, the opposite surfaces of the film being in connection with electrically leading contact surfaces; column 2, lines 39-42) thereof wherein the piezoelectric film material is attached to the strap (piezoelectric sensor element 21 again is embedded between two insulating tapes 19, 20 forming a flexible measuring strip, the ends of which are clamped by means of strainer parts 22, 23 and leader ends 24, 25; column 7, lines 40-44; figure 5).

Kempl is silent regarding:

Regarding claim 27, the piezoelectric film material is attached to the outer surface of the strap.

Regarding claim 28, the strap is a metallic material.

Regarding claim 38, the piezoelectric film material is attached to the inner surface of the strap.

Yelke teaches:

Regarding claim 27, the piezoelectric film material is attached to the outer surface of the strap (the piezoelectric strip 30A is affixed to the external surface of collar 22; column 2, lines 44 and 45; figure 3, elements 22 and 30A).

Regarding claim 28, the strap is a metallic material (a split collar or clamp 22 of thin brass or spring steel; column 2, lines 12-14).

Regarding claim 38, the piezoelectric film material is attached to the inner surface of the strap (column 2, lines 20-22).

Regarding claims 27, 28 and 38, it would have been obvious to one skilled in the art at the time of the instant invention to modify the teaching of Kempl of a strain sensor for clamping onto the outer surface of a pipe to provide a respective strain signal indicative of a pressure disturbance within the pipe with the teaching of Yelke of piezoelectric film material attached to the outer surface of a strap; a strap is a metallic material; and piezoelectric film material is attached to the inner surface of a strap because piezoelectric film material attached to the outer surface of a strap, the strap being of a metallic material; and piezoelectric film material attached to the inner surface of the strap would have been important to permit the collar and piezoelectric material to closely conform to the circumference of the associated line to assure that the piezoelectric material bears against the surface of the line to provide a defined signal (Yelke column 4, lines 5-9).

Claims 1, 2, 4-6, 8, 11, 14-16, 18, 19, 21-23 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Romanet et al. (US 2003/0010126) (Hereafter referred to as Romanet) in view of Kempl.

Romanet teaches:

Regarding claim 1, at least two strain sensors disposed about an outer circumference of the pipe at different axial locations along the pipe (possible to envisage setting up on the pipe 2 a second measurement zone Z.sub.2 at a distance from the first zone Z_1 along the longitudinal axis X; ¶ 0041, lines 1-4; figure 1), each of the strain sensors providing a respective strain signal indicative of a pressure disturbance within the pipe (fitted with two such sensors, each of which is responsive to the deformations to which the pipe 2 is subject due to variations in the pressure of the fluid; ¶ 0026, lines 3-5) at a corresponding axial position.

Regarding claim 1, a strap (clamping collar; ¶ 0030, line 6; figure 4A, element 21).

Regarding claim 1, piezoelectric film material (each vibration sensor 23 is constituted by an accelerometer of piezoelectric type or an optical fiber or of piezoelectric films (PVDF, copolymer, PZT, etc.); ¶ 0030, lines 16-18; figure 4A, element 23) having a pair of conductors disposed on opposing surfaces thereof whereby the piezoelectric film is attached to the strap.

Regarding claim 1, a signal processor (processing means; ¶ 0027, line 2; figure 1A, element 8), responsive to said strain signals, which provides a signal indicative of at least one parameter of the process flow flowing within the pipe (enabling variations in the pressure of the fluid inside the pipe 2 to be determined on the basis of measured variations in deformation detected by each deformation sensor; ¶ 0027, lines 2-5).

Regarding claim 2, the process flow is one of a single phase fluid and a multi-phase mixture (detecting or measuring flow disturbances for a gaseous, liquid, or multiphase fluid flowing in a pipe; ¶ 0002, lines 2 and 3).

Regarding claim 8, the piezoelectric film material includes at least one of polyvinylchlorine fluoride (PDVF), polymer film and flexible PZT (piezoelectric films (PVDF, copolymer, PZT, etc.); ¶ 0030, line 18).

Regarding claim 15, the strain signals are indication of acoustic pressures propagating within the pipe (detecting or measuring flow disturbances for a gaseous, liquid, or multiphase fluid flowing in a pipe; ¶ 0002, lines 2 and 3).

Regarding claim 16, the parameter of the fluid is one of steam quality or "wetness", vapor/mass ratio, liquid/solid ratio, volumetric flow rate, mass flow rate, size of suspended particles, density, gas volume fraction, and enthalpy of the flow (able to characterize the disturbances in the flow of a fluid, e.g. disturbances corresponding to variation in pressure or flow rate; ¶ 0003, lines 2-4).

Regarding claim 18, the strain signals are indication of vortical disturbances within the fluid flow (detecting or measuring flow disturbances for a gaseous, liquid, or multiphase fluid flowing in a pipe; ¶ 0002, lines 2 and 3).

Regarding claim 19, the parameter of the fluid is one of velocity of the process flow and the volumetric flow of the process fluid (able to characterize the disturbances in the flow of a fluid, e.g. disturbances corresponding to variation in pressure or flow rate; ¶ 0003, lines 2-4).

Regarding claim 21, the signal processor determines the volumetric flow rate of the fluid flowing in the pipe in response to the velocity of the fluid (able to characterize the disturbances in the flow of a fluid, e.g. disturbances corresponding to variation in pressure or flow rate; ¶ 0003, lines 2-4).

Regarding claim 22, the signal processor generates a flow velocity signal indicative of the velocity of the fluid flowing within the pipe by cross-correlating the strain signals (measurements performed by the sensors of the same kind belonging to the two zones are correlated with each other; ¶ 0041, lines 8-10).

Regarding claim 23, each sensor measures an acoustic pressure and provides a signal indicative of an acoustic noise within the pipe (able to characterize the disturbances in the flow of a fluid, e.g. disturbances corresponding to variation in pressure or flow rate; ¶ 0003, lines 2-4).

Romanet is silent regarding:

Regarding claim 1, piezoelectric film material having a pair of conductors disposed on opposing surfaces thereof whereby the piezoelectric film is attached to the strap.

Kempl teaches:

Regarding claim 1, piezoelectric film material having a pair of conductors disposed on opposing surfaces thereof whereby the piezoelectric film is attached to the strap (the piezoelectric measuring sensor element is a flexible piezoelectric film, the opposite surfaces of the film being in connection with electrically leading contact surfaces; column 2, lines 39-42) thereof wherein the piezoelectric film material is attached to the strap (piezoelectric sensor element 21 again is embedded between two insulating tapes 19, 20 forming a flexible measuring strip, the ends of which are clamped by means of strainer parts 22, 23 and leader ends 24, 25; column 7, lines 40-44; figure 5).

Regarding claim 5, at least one of the strain sensors include an attachment device for securing the ends of the strap of the strain sensor to clamp the strain sensor onto the pipe (piezoelectric sensor element 21 again is embedded between two insulating tapes 19, 20 forming a flexible measuring strip, the ends of which are clamped by means of strainer parts 22, 23 and leader ends 24, 25; column 7, lines 40-44; figure 5).

Regarding claim 6, the ends of at least one of the strain sensors are removably attached together to enable the removable and reattachment to a pipe (In another embodiment the tension binder is provided with an easily releasable fastener, for instance a strainer; column 5, lines 12 and 13).

Regarding claim 11, the piezoelectric film material extends around a substantial portion of the circumference of a pipe (figure 5).

Regarding claim 14, an electrical insulator between the piezoelectric film material and the strap (it may be advantageous to provide flexible interposition layers between the piezoelectric film and the surface of the body to be measured. These layers may serve as an electrical insulation, as protection against mechanical damage of the film, or for taking charge off the piezoelectric film; column 3, lines 42-48).

Regarding claim 25, the strain sensors include pressure sensors (known to attach strain gauges on pipes to measure stretch of
the pipe or pressure within the pipe; column 1, lines58 and 59).

Regarding claims 1, 2, 4-6, 8, 11, 14-16, 18, 19, 21-23 and 25, it would have been obvious to one skilled in the art at the time of the instant invention to modify the teaching of Romanet of strain sensors disposed about an outer circumference of a pipe at different axial locations along the pipe, each sensor providing a signal indicative of a pressure disturbance within the pipe at a corresponding axial position; a strap; and a signal processor, responsive to strain signals, providing a signal indicative of at least one parameter of a process flow flowing within the pipe with the teaching of Kempl of piezoelectric film material having a pair of conductors disposed on opposing surfaces thereof whereby the piezoelectric film is attached to the strap because piezoelectric film material having a pair of conductors disposed on opposing surfaces thereof whereby the piezoelectric film is attached to the strap would have enabled the simultaneous use of the advantageous properties of strain gauges and piezoelectric sensors while avoiding the disadvantages of both transducer principles (Kempl column 2, lines 45-55).

Claims 3, 4 and 39 are rejected under 35 U.S.C. 103(a) as being unpatentable over Romanet in view of Kempl and further in view of Yelke.

Romanet teaches:

Regarding claim 1, at least two strain sensors disposed about an outer circumference of the pipe at different axial locations along the pipe (possible to envisage setting up on the pipe 2 a second measurement zone Z.sub.2 at a distance from the first zone Z_1 along the longitudinal axis X; ¶ 0041, lines 1-4; figure 1), each of the strain sensors providing a respective strain signal indicative of a pressure disturbance within the pipe (fitted with two such sensors, each of which is responsive to the deformations to which the pipe 2 is subject due to variations in the pressure of the fluid; ¶ 0026, lines 3-5) at a corresponding axial position.

Regarding claim 1, a strap (clamping collar; ¶ 0030, line 6; figure 4A, element 21).

Regarding claim 1, piezoelectric film material (each vibration sensor 23 is constituted by an accelerometer of piezoelectric type or an optical fiber or of piezoelectric films (PVDF, copolymer, PZT, etc.); ¶ 0030, lines 16-18; figure 4A, element 23) having a pair of conductors disposed on opposing surfaces thereof whereby the piezoelectric film is attached to the strap.

Regarding claim 1, a signal processor (processing means; ¶ 0027, line 2; figure 1A, element 8), responsive to said strain signals, which provides a signal indicative of at least one parameter of the process flow flowing within the pipe (enabling variations in the pressure of the fluid inside the pipe 2 to be determined on the basis of measured variations in deformation detected by each deformation sensor; ¶ 0027, lines 2-5).

Romanet is silent regarding:

Regarding claim 1, piezoelectric film material having a pair of conductors disposed on opposing surfaces thereof whereby the piezoelectric film is attached to the strap.

Regarding claim 3, the piezoelectric film material is attached to the outer surface of the strap,

Regarding claim 4, the strap is a metallic material.

Regarding claim 39, the piezoelectric film material is attached to the inner surface of the strap.

Kempl teaches:

Regarding claim 1, piezoelectric film material having a pair of conductors disposed on opposing surfaces thereof whereby the piezoelectric film is attached to the strap (the piezoelectric measuring sensor element is a flexible piezoelectric film, the opposite surfaces of the film being in connection with electrically leading contact surfaces; column 2, lines 39-42) thereof wherein the piezoelectric film material is attached to the strap (piezoelectric sensor element 21 again is embedded between two insulating tapes 19, 20 forming a flexible measuring strip, the ends of which are clamped by means of strainer parts 22, 23 and leader ends 24, 25; column 7, lines 40-44; figure 5).

Yelke teaches:

Regarding claim 3, the piezoelectric film material is attached to the outer surface of the strap (the piezoelectric strip 30A is affixed to the external surface of collar 22; column 2, lines 44 and 45; figure 3, elements 22 and 30A).

Regarding claim 4, the strap is a metallic material (a split collar or clamp 22 of thin brass or spring steel; column 2, lines 12-14).

Regarding claim 39, the piezoelectric film material is attached to the inner surface of the strap (column 2, lines 20-22).

Regarding claims 3, 4 and 39, it would have been obvious to one skilled in the art at the time of the instant invention to modify the teaching of Romanet of strain sensors disposed about an outer circumference of a pipe at different axial locations along the pipe, providing strain signals indicative of a pressure disturbance within the pipe at a corresponding axial position; a strap; piezoelectric film material; and a signal processor, responsive to strain signals, providing a signal indicative of at least one parameter of a process flow flowing within the pipe with the teaching of Kempl of piezoelectric film material having a pair of conductors disposed on opposing surfaces thereof and further with the teachings of Yelke of piezoelectric film material attached to the outer surface of a strap; the strap is a metallic material; and piezoelectric film material is attached to the inner surface of the strap because piezoelectric film material attached to the outer surface of a strap, the strap being of a metallic material; and piezoelectric film material attached to the inner surface of the strap would have been important to permit the collar and piezoelectric material to closely conform to the circumference of the associated line to assure that the piezoelectric material bears against the surface of the line to provide a defined signal (Yelke column 4, lines 5-9).

Allowable Subject Matter

4 Claims 7, 10, 12, 13, 17, 20, 24, 31, 33, 35 and 36 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

The following is an examiner's statement of reasons for allowance:

Claim 7 recites, in part, "the ends of at least one of the strain sensors are permanently attached together". This feature **in combination with the remaining claimed structure** avoids the prior art of record.

Claim 10 recites, in part, "each of the pair of conductors is a coating of silver ink". This feature **in combination with the remaining claimed structure** avoids the prior art of record.

Claim 12 recites, in part, "the piezoelectric film material has a thickness greater than 8 mm". This feature **in combination with the remaining claimed structure** avoids the prior art of record.

Claim 13 recites, in part, "the piezoelectric film material has a thickness between 8 mm and 120 mm". This feature **in combination with the remaining claimed structure** avoids the prior art of record.

Claim 17 recites, in part, "the signal processor determines the slope of an acoustic ridge in the k-ω plane to determine a parameter of the process flow flowing in the pipe". This feature **in combination with the remaining claimed structure** avoids the prior art of record.

Claim 20 recites, in part, "the signal processor determines the slope of a convective ridge in the k-ω plane to determine the velocity of the fluid flowing in the pipe". This feature **in combination with the remaining claimed structure** avoids the prior art of record.

Claim 24 recites, in part, "at least three of said strain sensors". This feature **in combination with the remaining claimed structure** avoids the prior art of record.

Claim 31 recites, in part, "the ends of the strain sensor are permanently attached together". This feature **in combination with the remaining claimed structure** avoids the prior art of record.

Claim 33 recites, in part, "each of the conductors is a coating of silver ink". This feature **in combination with the remaining claimed structure** avoids the prior art of record.

Claim 35 recites, in part, "the piezoelectric film material has a thickness greater than 8 mm". This feature **in combination with the remaining claimed structure** avoids the prior art of record.

Claim 36 recites, in part, "the piezoelectric film material has a thickness between 8 mm and 120 mm". This feature **in combination with the remaining claimed structure** avoids the prior art of record.

It is these limitations, which are not found, taught or suggested in the prior art of record, and are recited in the claimed combination that makes these claims allowable over the prior art.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Response to Arguments

5 Applicant's arguments filed 13 August 2007 have been fully considered but they are not persuasive.

Applicant argues, regarding claims 26-30, 32, 34, 37 and 38, "Krempl does not disclose, teach, or suggest a strap having piezoelectric film attached thereto. Instead, Krempl discloses a "sensor element 21... embedded between two insulating tapes 19, 20 forming a flexible measuring strip, the ends of which are clamped by means of strainer parts 22, 23" Krempl at column 7, lines 40-44 and FIG. 5. Krempl's flexible measuring strip is simply wrapped around a pipe 28, opposing ends of which are clamped to hold the measuring strip on the pipe by strainer parts 22, 23. There is no strap whatsoever disclosed in Krempl. In fact, Krempl's flexible measuring strip functions as a strap so that the addition of a strap to the apparatus of Krempl would be duplicative and unnecessary. Accordingly, Krempl teaches away from use of a strap."

Examiner notes applicant admission that "Krempl's flexible measuring strip functions as a strap" therefore applicant's argument that "Krempl teaches away from use of a strap" fails.

Applicant argues, regarding claims 1-6, 8, 11, 14-16, 18, 19, 21-23, 25 and 39, "The Examiner has mischaracterized Romanet by alleging that the accelerometers recited in Romanet constitute ""strain sensors.., comprising a piezoelectric film material,"" .... **Accelerometers are not strain sensors**. Accelerometers and strains sensors have entirely different functions. For example, an accelerometer is a device for measuring acceleration, whereas a strain gage is a device used to measure deformation or strain of an object. Moreover,Romanet discloses "pressure sensors 6 of the strain gage type, either resistive or optical fiber." Romanet at paragraphs [0026]. Strain gages of the resistive type and optical fiber type both function on entirely different operating principles than that of "strain sensors.., comprising a piezoelectric film material," as recited in Claim 1. For example, in resistive strain gauges, the resistance of the conductor changes in relation to strain upon the conductor. Fiber optical strain gauges operate on the principle of positioning two optical fibers oppositely in order to transmit light from one fiber to the other and to provide a sWain- dependent relative movement of the fibers, whereby the transmission of light is dependent on the strain. In contrast, "strain sensors.., comprising a piezoelectric film material," generate an electrical signal proportional the degree that the material is mechanically deformed. This is directly opposite the manner in which resistive strain gages operate. Because Romanet teaches either resistive or optical fiber, and "either" means "one or the other of two," it follows that Romanet teaches away from "strain sensors.., comprising a piezoelectric film material," as recited in Claim 1 of the current application."

Contrarily, examiner notes Roment et al. (US 20030010126) discloses "For example, each vibration sensor 23 is constituted by an accelerometer of piezoelectric type or an optical fiber or of piezoelectric films (PVDF, copolymer, PZT, etc.). Each vibration sensor 23 is connected via a connection 25 to measuring and processing means 26 enabling variations of noise and vibration produced by the flow of fluid inside the pipe to be determined by measuring the vibration detected by each vibration sensor 23." (¶ 0030, lines 15-18) and further that it was well known at the time of the instant invention that strain gauges may comprise accelerometers as evidenced by Nemir et al. US 5,168,673 "The states of tension, compression, and relaxation of each beam 10 are sensed and monitored by strain gauges 20. **Strain gauges 20 may comprise accelerometers, resistive, piezoelectric and magnetostrictive strain gauges, as well as other strain gauges well known to those ordinarily skilled in the art.** (column 7, lines 65 et seq; column 8, lines 1 and 2).

Conclusion

6 **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Douglas N. Washburn whose telephone number is (571) 272-2284. The examiner can normally be reached on Monday through Thursday 6:30 AM - 4:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John E. Barlow can be reached on (571) 272-2269. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

DNW

John Barlow
Supervisory Patent Examiner
Technology Center 2800